

Honey-Houses, Poor Crops, Co-operation.

F. GREINER.

Importance of Bacteria to Alfalfa.

J. E. JOHNSON.



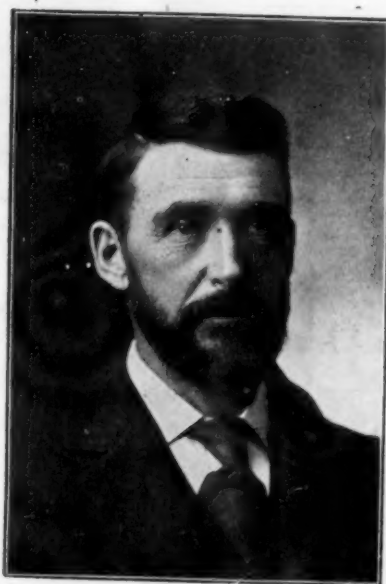
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WEEKLY



N. E. FRANCE,
General Manager National Bee-Keepers' Association.



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ESTABLISHED IN 1861 AMERICAN THE OLDEST BEE-PAPER IN AMERICA BEE JOURNAL

43d YEAR.

CHICAGO, ILL., APRIL 2, 1903.

No. 14.

✱ Editorial. ✱

Improvement of Stock.—It may seem like harping a good deal on one string, but the matter is one of so much importance that it warrants a good deal of repetition, and besides there are some new members of the American Bee Journal family that perhaps need telling for the first time. Those who have been working faithfully, perhaps for years, in the direction of the best stock obtainable, can skip this.

No observing bee-keeper has failed to notice the disparity of results often obtaining between two colonies sitting side by side. To all appearance one colony is as strong as the other, conditions are the same for each, yet one stores twice as much as the other. The only way to account for the difference is by attributing it to the difference in stock, and that is equivalent to saying that the difference in results is caused by the difference in queens, for the character of the stock depends upon the character of the queen.

If you have in any one of your colonies a queen that is satisfactory, well and good. If not, make up your mind here and now that you will try to get from some source a queen that will be likely to improve your stock. The matter is the more hopeful because the introduction of fresh blood will at least score one point of gain.

Having one good queen you will have one good colony, and having one good colony the road leading to improvement of other colonies is neither long nor difficult. Of this, more hereafter.

Breeding from Freaks has been condemned by F. B. Simpson, those queens being considered freaks whose workers make very exceptional work in storing. Others, however, insist upon the rule, "Breed from the best," whether those "best" be considered freaks or not. The Rocky Mountain Bee Journal, usually very reliable in giving advice, seems to take ground in the matter that is a little difficult to understand. A correspondent writes:

I had one new swarm that commenced work in the brood-chamber and super at the same time, and stored 85 pounds of first-class section honey. I contemplate rearing queens from this colony.

To this the Rocky Mountain Bee Journal replies:

It would be better, perhaps, to purchase a tested queen of some reliable breeder to use as a basis, rather than the freak colony you

mention. As a rule, it is the experience of breeders that freaks rarely reproduce themselves, but usually revert to the opposite extreme. G. M. Doolittle, by carefully selecting mother-queens that have made the best averages, during a period of over 30 years, has very greatly increased the average yield per colony in his apiary.

But were those not precisely freaks that Mr. Doolittle used? Unless he has been misunderstood, he simply bred from those whose workers gave largest yields.

Cleaning Propolis Off the Hands.

One of the most convenient things to use is butter; not better than lard or other grease, perhaps, but generally more conveniently at hand. Take just a little butter, rub it on the glue till the glue scrapes off readily, then wash with soap and water—preferably hot water.

Alkin's Bologna-Sausage Package for honey takes up no less than seven pages of space in *Gleanings in Bee-Culture*, and a strong plea is made in favor of putting up honey in this form; that is, in the granulated condition in paper. Small cost is of course one chief argument, the paper bags costing about one-tenth as much as tin lard-pails. The other principal argument is the matter of convenience. A penknife runs two or three slits in the paper, and then the paper is easily peeled off, leaving the lump of granulated honey on the plate like a brick of butter. Then a slice can be taken and used just as a slice of butter, and from this can be taken individual portions just as with butter, the individual being able easily to take what he wants and to put it just where he wants it, without the trouble of having the honey stringing and daubing where it is not wanted.

With a certain class there is likely a future for honey put up in this style, and if there is, the credit for it should be given to Mr. Alkin.

Time to Cut Alfalfa.—Some anxiety on the part of bee-keepers has been felt because there was a fear that it would become the general practice to cut alfalfa in first bloom, giving little opportunity for bees to work upon it. This anxiety was by no means allayed by the fact that experiments at the Kansas experiment station seemed to favor early cutting. Not, however, the experiment station of Colorado, a State *par excellence* an alfalfa State, makes a very different decision. Bringing the question down to the very practical form, "At what stage should alfalfa be cut to get the greatest feeding value per acre?" the reply is, that when cut in full bloom an acre will produce 11 percent more beef than when cut in first bloom, and 58 per-

cent more than when cut in half bloom. The following is from the report:

If we cut enough alfalfa in bud to make 100 pounds of hay, the same alfalfa would make 126 pounds if allowed to stand till in half bloom, and 145 pounds if allowed to stand till in full bloom. If allowed to stand longer it would decrease. If the question were, "When shall we cut alfalfa in order to make the most hay?" the answer would be, "When it is in full bloom." The question as presented to us is, "When is the best time to cut alfalfa?" This time is evidently that at which we shall have, not the largest yield of hay, nor of the best quality, but the largest yield of digestible food ingredients. This answer considers two factors—composition and digestibility. Every feeder will mentally add, "But there are other things to be considered," which is true, but it is assumed that the animals will eat the hay of which we are writing, and will relish it.

We have given the amounts of hay which the same quantity of alfalfa would give when in bud, in half bloom, and in full bloom, using the figures obtained for our Colorado alfalfa. The 100 pounds of early-cut hay will contain 15 pounds of albuminoids and 1.5 pounds of amids; the 126 pounds of hay, alfalfa cut in half bloom, will contain 15.8 pounds of albuminoids and 2.9 pounds of amids; the 145 pounds of hay cut in full bloom will contain 19 pounds of albuminoids and 2 pounds of amids. Leaving the value of the amids out of the question, for they are assumed to have only a small value as compared with albuminoids, and reducing these figures to the basis of a pound, we find the relative values to be 1.16 for the early cutting, 1.00 for that cut in half bloom, and 1.08 for that cut in full bloom. Or, stated otherwise, 86.2 pounds of alfalfa hay cut in bud, or 92.6 pounds cut in full bloom are equal in value, using the albuminoids as the criterion, to 100 pounds of alfalfa hay cut in half bloom, so that alfalfa hay cut in half bloom is inferior to that cut in bud. In this statement we assume that the albuminoids are equally digestible at the three different stages of development here specified. If this be true, the largest amount of digestible proteids would be obtained by cutting in full bloom; for while the relative values of the hay cut in bud to that cut in full bloom is as 100 to 107, the yield is about 100 to 145, leaving an advantage of 38 pounds of hay on each 145 pounds of hay cut in full bloom. These figures refer to the first cutting.

The feeding experiments are decidedly in favor of the early cutting, calculating the value on pound for pound of hay produced. But if we calculate its value in terms of beef produced per acre, we come to the same conclusion at which we arrived from the consideration of its chemical composition and the relative crops produced at the respective periods. Mr. Mills summarized the results of his three seasons' feeding as follows: That to produce one pound of gain, beef, it requires 18.21 pounds of hay of the early cut; 33.44 pounds of the medium cut (page 11, Bulletin 44). But we have seen that the relative quantities of the early, medium, and late cut are 100, 126, and 145. Accordingly we would obtain for the values of the respective cuts in terms of beef, 5.4 pounds for the early, 3.8 pounds for the medium, and 6.0 for the late cut. We would, therefore, answer the question in so far as it pertains to the first cutting, that the best time to cut

alfalfa is at the period of full bloom, for at this period we not only get the largest amount of hay, but also the largest return in pounds of beef per acre.

The results of feeding experiments with the second cutting leads to the conclusion that the best time to cut this crop is what Mr. Mills designated his medium cut.

I conclude that, after allowing for a little latitude in the use of the terms "half bloom," "full bloom," "late bloom," etc., the time to cut alfalfa in order to get the greatest value per acre is at the period of full bloom, and that there is a period of about a week during which its value is essentially constant.

Weekly Budget.

E. E. HASTY, of Lucas Co., Ohio—our "Afterthoughter"—wrote as follows, March 25th:

"The cold snap of three weeks ago didn't seem to do much harm. Perhaps yesterday's gale with thermometer near freezing will do more—more brood started now."

MR. T. F. BINGHAM, of Clare Co., Mich.—the popular Bingham smoker man—wrote us March 26:

"The weather is bright and frosty this morning. All colonies came out alive from the cellar, in time to be caught in a cold snap. It will be a good test on early exit from ventilated cellar, should enough live through in my thin hives."

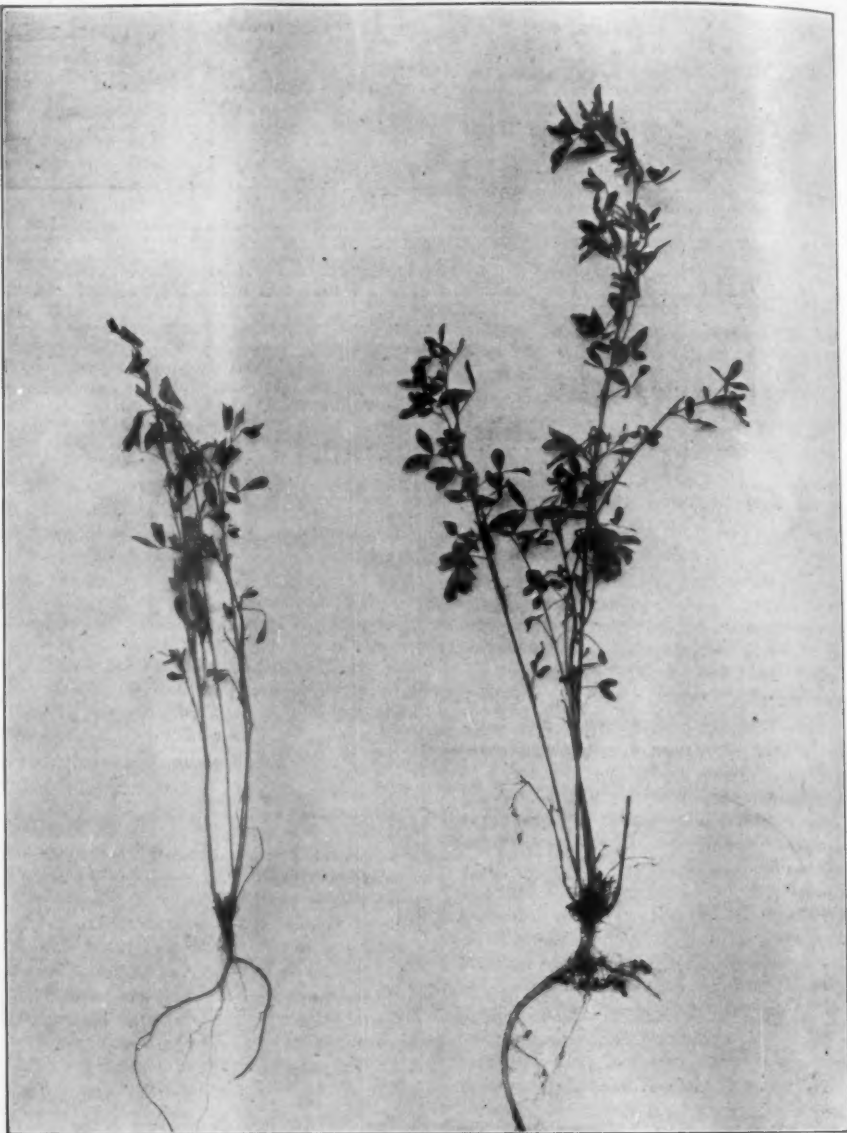
SOMNAMBULIST AND F. L. THOMPSON.—Somnambulist seems to view with some little trepidation the seating of F. L. Thompson upon the editorial tripod in the office of the Progressive Bee-Keeper, saying:

F. L. Thompson takes a position on the editorial staff, and, oh! my! won't we all have to toe the mark, and at the same time keep up a succession of dodgings to escape getting our ears boxed? I've my head to one side now in anticipation of a slap, because I feel like favorably commenting on his January contribution.

YOUR SUBSCRIPTION to the American Bee Journal—how about it? Is it paid in advance? If not, why not attend to it at once? We doubt if there is a single reader that begrudges the small sum of one dollar for a year's subscription to this journal. Naturally, we believe it is the biggest and best dollar's worth of bee-literature that is produced today. Certainly, one dollar is a small sum for 52 copies, or over 800 pages, of the Bee Journal.

When sending your own renewal subscription, why not send in some new ones and get some of the premiums we offer for so doing? See page 210.

THE NEW GENERAL MANAGER of the National Bee-Keepers' Association, Mr. N. E. France, is the best-known bee-keeper in Wisconsin. He is also Inspector of Apiaries for that great State. His predecessor in the General Manager's office, Eugene Secor, turned over to him the snug sum of \$921.00, and reported about 1000 members. But the membership should be doubled this year. We wish that every reader of the American Bee



Courtesy Illinois Experiment Station.

Alfalfa Plants, Showing an Uninoculated Plant on the Left, and an Inoculated Plant, with Root Tubercles and Increased Growth, on the Right.—(See page 215.)

Journal were a member. This alone would put an additional sum of money in the treasury that could be spent in the interest of bee-keeping in a way that would tell for years to come. There is much important work that could be done, provided the financial means were provided therefor.

Reader, if you are not already a member of the National Association, why not join at once? If you prefer, or if it is more convenient, you can send your dollar to this office, as we are the Secretary of the Association for this year. We will forward your dues to the General Manager, who will send you a receipt.

We have received quite a number of membership dollars recently, and would be glad to take care of a lot more.

DADANT & SON, of Hancock Co., Ill., as most of our readers know, are successors to the old and honored firm of Chas. Dadant & Son. They are makers of comb foundation,

and their reputation for making a good article has increased with the years. A large lot of comb foundation, shipped by them to their French correspondent at Paris, was unexpectedly stopped at the French custom-house at Havre, and ordered examined for traces of adulteration by the French Revenue officers. The Government Chemists at Rouen, to whom samples were sent for analysis, promptly reported the foundation to be made of *absolutely pure beeswax*.

But this verdict will be no surprise to their American friends, for they all know, and have known for over a quarter of a century, that the name "Dadant," in connection with comb foundation, is a synonym for honest as well as superior goods.

PASTE FOR LABELS.—In making paste for labels on tin, I use equal parts of hot water and honey, and dissolve enough corn-starch to make a thick paste. This works perfectly.—H. C. AHLERS, in *Gleanings in Bee-Culture*.

Convention Proceedings.

Chicago-Northwestern Convention.

Report of the Chicago-Northwestern Bee-Keepers' Convention, held in Chicago, Dec. 3 and 4, 1902.

BY OUR OWN SHORTHAND REPORTER.

(Continued from page 197.)

THE USE OF CHAFF-HIVES.

Pres. York—You can ask any question you would like to hear discussed, and we will have the slips gathered up pretty soon, so we will have questions on hand all the time. There is one slip here with simply "chaff-hive" on it. I don't know what the questioner wants to ask. How many are now using chaff-hives?

Eight held up their hands.

Pres. York—I suppose all the rest do not use them. What advantage is there over the non-chaff single-walled hives?

Mr. Whitney—This question of hive is like many others a question of locality. I always used chaff-hives until I sold out my bees last spring, and now I have an old-style hive I wish I was rid of. I like the chaff-hive. A double-wall hive, the second story a single shell with an outside case that is sufficiently high to contain two or three sections. I find that the best hive that I have ever seen. I think I can produce more honey with such a hive as that than any other. The bees in the double-wall hive, such as I described, however strong they may be, will gather around the section-cases. I scarcely ever have any hanging out when I use that kind of a hive. I know it isn't popular with most people, but give me the chaff-hive of the kind I describe over any other kind I ever had.

Pres. York—Let me ask Mr. Root or Mr. Leahy about the demand for chaff-hives. I could answer for this point, but perhaps it would be better for the manufacturers to answer that.

Mr. Root—I wouldn't be able to answer.

Pres. York—Mr. Leahy, how is it about the chaff-hive down in Missouri?

Mr. Leahy—I used to be a believer in the chaff-hives. I used to think that I got brood earlier in the spring, and I believe I did, but later on, when the warm seasons came, the bees didn't develop as fast then as they did in the single-walled hives. Cellar-wintering I believe in. I have disposed of all my chaff-hives—gave them away.

Mr. Whitney—I am aware, as I said before, that the chaff-hive is not a popular one. One great reason I think is, it is an expensive hive, costs twice as much as any other hive that I have ever seen; but, as Mr. Leahy says, I think they do develop brood more rapidly in the spring, and by the time fruit-bloom is on, especially in this locality, you will have a very strong colony of bees. I have always had. I disposed of my bees last spring down at Kankakee, looked them over in April, and my friends said, "What strong colonies of bees you have." I said, "I always have; I wouldn't have any other; and they are always ready as soon as there is any honey to get." During the hot season the double-wall hive, I think, protects the bees from the extreme heat of the sun. I can set them right out without any shade, and during the early spring, when a single-wall hive, it seems to me, would be affected by the extreme heat and cold, the double-wall hive maintains a medium temperature like a refrigerator, for instance; there isn't the variation that there is in a single-wall hive. I think the bees are carefully protected in such a hive. I know that I produce so much more honey than my neighbors that they wonder why. I told them that I thought it was partly the kind of hive I used, and perhaps because I gave them more attention than some others, and get twice the amount of honey that other people get.

Mr. Wilcox—Did you try any without chaff in the same apiary?

Mr. Whitney—Not here, but in Ohio I did. I have always had better success with the chaff-hive, that's why

my experience in that matter has determined me in favor of that hive. I never think of protecting my bees in this locality except by putting cushions on top of the hive. I have never lost a colony from freezing.

Mr. Niver—In central New York everybody uses chaff-hives. In Wisconsin they can't use them at all. I think it is altogether a matter of locality. In Wisconsin they must winter them in a cellar. A chaff-hive in a cellar is a nuisance. We, in New York, can't winter outside without the chaff-hive, and we can not successfully get our bees in the spring ready for business without the chaff-hive. We can winter outside, everybody in our locality (in Tompkins Co., N. Y., which is the greatest county for bees), they all winter in chaff-hives, and using them that way and in that locality it is correct. There are a great many things besides wintering. In our apiaries we have no robbing. There is four inches of space for them to get in. No loose cracks, and then the sun can't warm them up so they will fly out when they don't want to. We never want the sun to warm them up. If it is warm enough they will swarm there. It will be mostly a matter of locality. Each one must study his locality.

Mr. Abbott—I had a big experience with hives when I first went to Missouri. I bought and sold the best. I ran an apiary of about 200 colonies. The result was I had a chaff-hive—a Jerseyville hive. It had a place for packing around over the brood-chamber 6 or 8 inches. I had these in my apiary, quite a number of them, because that was the only hive that was sold and pushed when I went there; and among them I had a number of hives that were $\frac{3}{4}$ of an inch thick, and one inch, and I was a great believer in the chaff-hive; although I had kept bees in Tioga Co., N. Y., I never had thought of a chaff-hive, and I don't know it yet that bees will freeze. I never thought anything about it until that winter. The first colony that swarmed, and the colony that stored the most honey, was in a $\frac{3}{4}$ hive, no protection at all, right out-doors in Missouri where it gets 28 degrees below. That made me look the matter up, and I watched it for several years, and I discovered that the first bees that swarmed were always in these thin-walled hives, and the bees in Jerseyville hives didn't swarm as quickly as the others, and they didn't give me any more honey. I haven't any use for chaff-hives in Missouri. Possibly in Wisconsin I might have to use them. I wondered why it was. I don't know, only the bees warmed up quicker and began to breed sooner, and a number of those hives were protected by putting store-boxes over them, and then they were taken off early in the spring. I think the thin-wall hives, protected that way, were the best, and responded quicker than any I know, and I was buying and selling the best for eight or ten years that way. I thought these hives were of no account, but that was the result. Of course, I wouldn't advise anybody to use that kind of a hive.

Mr. Kluck—I have always been using 8 or 10 frame hives, also a large chaff-hive, and I find the chaff-hive produces from one-half to two-thirds more honey than the 8 or 10 frame hive does; and at the same time it is more safe in wintering bees in the chaff-hive than in the 8 or 10 frame single-wall.

Dr. Miller—How many frames?

Mr. Kluck—Ten frames in the lower story.

Dr. Miller—That is the same size frames as your others.

Mr. Kluck—Yes, sir; and another thing in support of them, in the spring you can breed the bees handier, and also it keeps them from swarming.

Mr. Fluegge—Take a single-wall hive, winter in a good cellar, and protected by wall-paper on the outside and an air-space between, would you not favor greatly the chaff-hive for spring protection and rearing brood?

Mr. Niver—Is that something in the same line as a house-apiary? Do you mean to have them above ground?

Mr. Fluegge—I mean in a good cellar without the protection in winter, and in the spring when you put them out protect them; not leave outside in the winter, partly beneath ground, in a house-cellar, and there is very changeable weather in the spring when you put them out.

Mr. Niver—If it is a house-apiary he is wintering in, in our locality we wouldn't recommend it. I lost 90 percent in that kind of an arrangement for two years.

Mr. Chapman—If you will try common, ordinary tar-felt, make a wrapping of it and tack a lath on where you join it, you will find that as good a spring protection as anything you can get, after taking them out of the cellar.

Mr. Wilcox—As for protection I think it may be a little hot excepting the few cold days that will come on during the first month, and I find a better method, and that is to place them where they will have the sun in the forenoon and no

wind, if I can find such a place conveniently near. They will breed out nicely protected from the wind and exposed to the sun, and I don't think if you can give them that, that it is advisable to go to the extent of further protection.

Mr. Fluegge—I think having only six colonies of bees as I have, it would be pretty hard to get wind-protection from four sides. I think it would be easier to protect the hives partly.

Mr. Wilcox—I never knew an east or south wind to do any harm.

Mr. Fluegge—I think a southeast wind, or a directly east wind, coming over Lake Michigan, does harm to our bees in the spring.

Mr. Wilcox—If you were 200 miles from the lake it wouldn't do them much harm.

Pres. York—I have a slip of paper which reads: "Speaking of wild bees, if the person who asked if there are any such bees, will call at 68th and Morgan streets, Chicago, next summer, he will never doubt that there are wild bees there!"

(Continued next week.)

Contributed Articles.

Mouse-Proof Honey-Hou — Poor Honey Crops—Co-operation.

BY F. GREINER.

THE following is a sort of confidential letter intended for publication:

"On page 729 I read: 'After sections are cleaned out pile up in honey-room and cover up mouse-tight.'"

This practically admits that the honey-house of the writer, Miss Emma Wilson, harbors mice. I wonder how many readers of the American Bee Journal put up with such conditions, are pestered with mice in their honey-rooms. If there is any thing objectionable in a honey-house or workshop of a bee-keeper it is *mice*. They will soil our sections, destroy combs, frames, separators, quilts, cushions, etc. Why tolerate the nuisance? A honey-house must be bee-proof, anyhow, at least bee-keepers (except the Cogshall) think so. If it is bee-proof, is it not mouse-proof? If it is not, it can and should be made so. I have never had any damage done by mice in my honey-house and workshop combined. They simply cannot get in, that's all!

Still, I believe in keeping all supers, empty or full, covered to keep out dust, spiders, flies, etc. All filled or honey-containing supers or hive-bodies are kept covered with bee-escape boards, not only to prevent the above-named things from making our honey unsightly, but to make a sure thing still surer—to make it impossible for bees ever to find it. I have had some sad experiences in this line. Once I left a window open when going to dinner. On my return the bees were in possession of the building, and bushels of them were collected and clustered at the windows. By nailing blankets over the windows from the outside, except over one, and by other tactics, I finally became master of the situation.

At another occasion the bees had entered a lot of stacked-up supers through a crack in the floor of an upstairs room, said room having been fitted up in a loosely built carriage-house temporarily for my use. A great deal of damage had been done in this second instance, the bees having had a long time to put in their work. On being sent for, and arriving late in the afternoon, I had hard work to clean out the bees and restore order. I learned a lesson that I will never forget: To stack my supers upon regular hive-bottoms, close the entrance with blocks and cover up bee-tight.

REPORTS OF THE HONEY CROP.

Mrs. E. Burdick, from New Mexico, says on page 730: "Bees have not done anything—only one full super per colony." A full super does not count anything with Mrs. Burdick. It would with me, as I will show further on.

I recollect another bee-keeper from the South reporting about a year ago: "Had a poor season; averaged but 16 gallons per colony. A year ago my average was 22 gallons."

Mr. Doolittle, if I mistake not, has told of harvesting

120 or 130 pounds of comb honey per colony in a *poor* honey season. Many others have made similar reports during the year, or years, past. When reading them I am at a loss to know what a poor or a good season is. It seems to me that as long as bees can gather enough for their winter supply, the season must be called a normal one. Dr. Miller, when he had to feed a ton or more of sugar had reason and might talk about a poor honey season. When the season is such as to enable one to take any surplus, it must be called favorable; and when the average runs up as high as 50 or more pounds it has been an exceptionally good one. A surplus yield of 400 or 600 pounds goes beyond my comprehension, and I find no term to express it.

All bee-keepers may not look upon this matter as I do. For the sake of clearing this thing up let us take the first case of Mrs. Burdick and see what it means. Her bees had done nothing, only filled one super. If the super contained 24 sections, and the honey was either clover or basswood, it would have bought, judiciously sold, not less than \$3.50. With no other work on hand one might attend to 300 colonies in 3 yards without other help. The income from the honey sold would present the neat sum of over \$1,000. The number of colonies have probably been increased also, and some may be turned into money. We will not count that, nor what may be obtained by selling wax. An income of a \$1,000 in a poor season is not very bad. Let them come. I have lived well with smaller yields.

The second case—the 16-gallons average—means more than 150 pounds of surplus per colony. For good table honey, in glass, I obtained this year 10 cents net. I might not have been able to sell many tons at that price. Let us put it down to 7 cents. At this low price each colony would have turned out the owner \$10.50, or 200 colonies would have given an income of \$2,100. This does not look to me like a bad thing in a poor season. I can't help wondering how much some people engaged in bee-culture expect to make, or what would satisfy them.

In a paper read at the Bee-Keepers' Convention in Buffalo, Mr. P. H. Elwood said, "The bee-keepers are poor." It cannot be possible that they are, with such honey-yields. The bee-business would be like a veritable gold-mine, as compared with farming, if in poor seasons such yields were being secured. If it is true that they are poor, then bee-keepers do not get the large yields they report.

The point I wish to make is, that things are often not called by the right name. The bee-keeper need not flatter himself, and tell about it, how much better he can manage than his neighbor. Other up-to-date men would do equally as well as he, in a *poor* season, with the same chance.

CO-OPERATION AMONG BEE-KEEPERS.

For the purpose of disposing of their honey, this seems to be uppermost in the minds of many, as gleaned from numerous articles in different bee-periodicals. Perhaps a move of this kind is all right, and may result in good, as regards the producer, if successful. From my own standpoint, with conditions as they surround me, I see no need of it whatever. I try to produce what is wanted, and sell it for what I can get for it. Producers of other articles of food are situated precisely as I am, and do as I do. If by co-operation we aim to distribute our product evenly, the general public would be benefited; but if our aim is to control prices, keeping them up or raising them, the move will be decidedly wrong. Many writers are of the opinion that honey is low, or too low, in price. They dwell upon the subject. It is my opinion that honey is sold at a higher price, comparatively, than other things—too high to encourage and increase consumption. Twenty-five years ago honey sold for not materially more, although a very fancy lace-trimmed lot brought me, f. o. b. here, 15 and 16 cents. At this price the bulk honey sold in New York (on commission) in 1876. In 1886 it sold in Philadelphia at 14 cents. Since then prices ranged between 12 and 15 cents, according to the supply and demand.

The farmers' wheat, 25 years ago, brought here \$1.50 per bushel. He did no better at that time than he does now with 75 cents per bushel. The farmers' income has been reduced to one-half, while the bee-keepers' income has almost held its own, during the same period. He ought to do well.

The greatest obstacles to co-operation are to get the bee-keepers to *co-operate*; and lack of available capital.

Ontario Co., N. Y.

The Premiums offered this week are well worth working for. Look at them.

Importance of Bacteria to Alfalfa.

BY J. E. JOHNSON.

FIRST, what are alfalfa bacteria? They are not bugs of the masculine gender, as Mr. Hasty seems to infer, on page 824, but are little flowerless plants which feed upon the roots of alfalfa, and gather nitrogen from the air, and fix it in the plant alfalfa. They are so small, says Prof. C. G. Hopkins, of the Illinois Agricultural College and Experiment Station, that one little tubercle the size of a pin-head may contain a million of these bacteria. As to their originating without inoculation, I believe it is considered impossible, or at least not probable, but all alfalfa seed probably contain bacteria in the dust along with the seed, and may contain some tubercles; but as alfalfa seed is generally pretty clean, the inoculation would be slight. Probably several years would elapse before the field would be thoroughly inoculated, and much of the alfalfa would suffer for want of available nitrogen, and be considered a failure and plowed up. In the west where land is cheaper in price, and the people more inclined to give it a chance, owing to non-success with other forage-plants, the same fields were re-seeded or let stand until the little plants called bacteria multiplied and filled the soil with countless numbers, and the alfalfa would then flourish and "the woodchuck would be theirs."

The different clovers must also have bacteria in order to be grown successfully, but Prof. Hopkins says they are of a different species, and that clover bacteria will not aid alfalfa. Neither will the cow-pea bacteria aid soja-beans. All have their own kind.

Now let me say that 14 years ago I was in the West (southern Kansas), and the farmers all claimed that clover would not grow there, but by persistent efforts they have finally succeeded, and now grow fine clover, and no doubt the clover bacteria along with the seed continued to multiply until the soil is now thoroughly inoculated. Even now many in Oklahoma say clover will not do there; but if they will get say 100 pounds of soil from an Eastern clover-field, in many now considered unfavorable localities clover may do well.

Prof. Hopkins says that the alfalfa bacteria have been found in a few places in Illinois, and wherever a field of alfalfa was found to have these tubercles the alfalfa did well, but where they were not present it was a failure. He advises farmers to sow alfalfa on hilly land or bottom land, or on almost any soil except wet, low ground where water will stand. Alfalfa grown on infected soil will do well almost anywhere in the United States; where so grown, it will yield 3 or 4 cuttings in Southern Illinois. Now as one little tubercle will contain as high as 1,000,000 of these bacteria, and one alfalfa plant will have 100 or more tubercles on its roots, or 100,000,000 of these bacteria or microscopic plants to aid it to be a flourishing alfalfa plant, can we justly expect it to yield honey when grown without these bacteria? They are a part of the plant, and the alfalfa is not complete without them.

Prof. Hopkins writes to me that he is told alfalfa does yield honey in Illinois, but as in his experiments the alfalfa is cut before it has a chance to bloom but very little (he advises early cutting), he has not been able to tell much about the honey part of it. Possibly he did not even think about that part of it, but I shall ask him, in behalf of the bee-keepers of Illinois, to test the matter this season.

In Dupage Co., Ill., 21 tons of alfalfa hay was cut in one season on two acres, or 10½ tons per acre, and that in 1901. You all know that was a dry season in Illinois. Now with such crops of hay as that, you may be sure the farmers will soon embrace alfalfa culture, and when it is grown properly, and not until then, can we expect it to yield honey.

It was through the enthusiastic efforts of Prof. Hopkins that this matter has been fully tested, and we feel justly proud of such men. The Illinois Experiment Station has done much valuable work. Their bulletins are free. Get them, and read them, especially Nos. 76 and 80; they are all good.

I think I am justified in saying that alfalfa properly grown in Illinois will yield honey just as well as it does in the West, where it yields with or without irrigation.

In conclusion, if we succeed in getting alfalfa successfully raised for both hay and pasture in the East, will the farmers cut their hay too early to let it yield honey? No. There are many cattle-feeders in this vicinity, and they will not cut even their clover until the heads turn brown, nor their timothy until it begins to ripen, as they all agree that when so fed in connection with corn it gives much better

results than when cut green; and so it is for horses that work on the farm, or used as drivers on the roads, or in fact anything except dairy cows. Here we raise corn and oats, and with the ever-pressing work of plowing corn and harvesting and threshing, alfalfa would have to wait.

I think alfalfa will play a very important part in the future, both as to forage and honey in Illinois.

Prof. Hopkins, of the Experiment Station at Urbana, Ill., has agreed to furnish me with as much infected soil as I want, at 50 cents per 100 pound, which he says is for the expense of handling, drying and racking. He says that in a thoroughly inoculated alfalfa field nearly every particle of dust would contain these germs, so you may see that 100 pounds would soon inoculate an acre; then that acre could be the means of inoculating the soil of a whole neighborhood. I think he is making efforts to supply all who wish with infected soil, at least all who live in Illinois, and maybe others, I don't know.

In three separate tests at the Experiment Station with inoculated and uninoculated soil, the average of nitrogen gatered by the bacteria, and fixed in the plants, alfalfa was grown at the rate of \$5.25 per acre. The weight of free nitrogen in the atmosphere is equal to about 12 pounds each square inch of the earth's surface, so the supply is inexhaustible, and so may enrich our land from the air instead of hauling manure. However, the ground should be pretty rich to begin with, and the application of lime to the soil is beneficial, especially to upland. Knox Co., Ill.



Joining the National—Other Matters.

BY J. M. YOUNG.

DO you belong to the National Bee-Keepers' Association? and have you paid your dues? If you don't belong you can't be an up-to-date bee-keeper. The Association needs your dollar, anyhow, and you might need some help from it. If nothing more, I would belong to get all the proceedings and reports that come up from time to time. By all means you should be a member to ask your neighbor to join with you. It is a dollar well spent, and you will not miss it.

USE OF BEE-VEILS AND BEE-SMOKERS.

Bee-veils are a good thing in their place, and are all right to have around when visitors are looking at the bees, but to see a bee-keeper wear one makes me feel as if he was not a good, genuine bee-keeper, and is afraid of bees. I seldom have one on, only in extreme cases, but I always have a lighted smoker and use smoke plentifully. I have had as cross bees as they generally get, and have had as many as 100 colonies in one apiary. I seldom open a hive unless I have a smoker, all in good trim (although it is not needed at all times) sitting close by in case of an attack.

GETTING KNOWN IN THE BEE-KEEPING WORLD.

Does everybody know you around home? and are you generally known among the editors of the different bee-papers as a bee-keeper, and that you have been in the business? If not, you would better get your name out among the bee-keeping fraternity in some way or other. It is a good idea, if you have anything to sell, and to make bee-keeping a success financially, a person must be generally known throughout the country. This can be done by judicious advertising through the leading bee-papers, telling them what you know, and what you don't know, through the press.

GET A RUBBER STAMP WITH NAME AND ADDRESS.

Every bee-keeper should have a small stamp, then stamp all his stationery and everything he sends out by mail. On every bit of matter sent through the mail put your name and address, for it will save your customers, and people who do business with you, a world of trouble. Again, it prevents mistakes in many instances. I put my name and address on every section I use on the hives, or that the honey is built in, and I also use it on every box I send out by express or freight; the latter stamp, of course, must be a larger one, for shipping by freight or express.

SLOPING BOTTOM-BOARDS.

I like sloping bottom-boards. Years ago, when I first began bee-keeping I used the American hive, made by H. A. King & Co. They were made, (as the old bee-keepers will remember) with the sloping bottoms. I liked the idea then, and always found them to be a big advantage over

the flat bottoms, especially in early spring; in cleaning-out time, all the dead bees were a great deal easier taken out, and the water that was caused by the bees had a good chance to run off.

During the present winter I am working on this same idea, that of sloping bottoms and a hive-cover combined by simply reversing, and having the top and bottom one and the same thing. In fact, the model that I am working on is a part of the up-to-date bottom-boards, with the same old idea of sloping of 30 years ago brought back into use again. I will test it in my own apiary one season before I say anything about it, and see how I like them. I don't suppose it will keep out the moths, or keep the bees from swarming; but just wait and see.

Cass Co., Nebr.

Our Bee-Keeping Sisters

Conducted by EMMA M. WILSON, Marengo, Ill.

Mrs. Griffith's Bee-Dress.

I promised the sisters I would tell them how I dressed when I commenced to keep bees, and the way I dress now.

I made bloomers with a rubber at the ankles, and a loose sacque with a belt to button around the waist, and rubber at the wrists; kid gloves, and a hat with mosquito-netting around it. I soon found that all that rig was too much trouble to put on, and too warm, so I dropped a piece at a time until I left off all but the hat.

Now I use only the hat, and not always that. When a swarm comes out, if they settle low, I put the hive under them and shake them in, and let them be for a little while. I pin my sleeves at the wrist, to keep the bees from getting up my sleeves, and put on my hat; that is all the preparation I make when I am going to do anything with the bees. I do not have anything on my hands, as I like to have them bare. Let me be working with the bees, or pulling weeds, or anything else, I like them bare, as I do not mind the looks of my hands, and I can work the best with them bare. I seldom get stung, and if I do, I don't mind their sting as the bite of the Jersey mosquito; they hurt me more than the bee-sting.

SARAH J. GRIFFITH.

Cumberland Co., N. J.

A Whole Bee-Keeping Family.

MISS WILSON:—I always enjoy the writings of "Our Bee-Keeping Sisters," and since this department has been started, the American Bee Journal has become doubly interesting. I have often wondered how much interest was really taken by bee-keepers' wives in their husbands' business.

I regret to note that those sisters who write seem to be "padding their own canoe," and there is no husband connected with the business. Now, please record that here is one sister who is trying to be a "helpmeet" to her husband, especially in the busy season of the year. For eight months our four children are in school, therefore at that season we do not have much time for bee-work, neither is there a necessity for a great rush in the bee-yards. Yet, on Saturdays we make and wire frames, paint hives, put together nucleus shipping-boxes, etc., and always manage to find something we can do profitably that might have to go undone later.

I must say it is a pleasure to spread the paint on nice, clean, new hives, and I have painted a hundred in one day, and manage, by the help of the girls, to keep up our house-work, too. With 500 colonies of bees in seven yards, from 4 to 20 miles out, there is hustling when the honey-flow begins until ready to be taken from the hives.

In this delightful climate camp life among the hills is delightful, with a wagon loaded with extracting and camping outfit, plenty of "grub," tents, bedding, etc., the wagon going ahead, we follow in the carriage. Best of all we have a negro cook who tends the team, helps about the heavy lifting, and does the odd jobs, and is much appreciated.

We usually reach the yard next to be worked in the afternoon. Tents erected, supper prepared and over, we

spread our beds for the night, and early next morning we are ready for business. Husband and our oldest son, Huber, age 16, will remove the honey from the hives and bring it to the extracting tent, while myself, and Alice, 14, and Kate, 12, will extract the honey and cut out the nice, white combs and pack in screw-cap cans ready for the market. Some of you Northern section-honey-producing sisters may laugh at this bulk-comb-honey product, but, believe me, we can not nearly supply the demand, and it nets us nearly as much per pound as section honey; then we have the advantage of filling in around the comb with extracted honey.

Are we afraid of stings? Yes, some—and stray bees brought into the extracting tent sometimes annoy, by crawling around too familiarly.

Our girls insist that it is more cleanly and comfortable to wear boys' overalls while working in the extracting house, hence they have their papa to buy them large, roomy overalls, which are drawn on over their clothing. Of course, visitors are not expected.

We have never kept a record of a whole day's work, but I think myself and two girls can extract, cut out, and pack, a ton of this bulk-comb honey in one day, with sufficient help to do the lifting.

I, for one, would like to hear from the wives of bee-keepers.

MRS. W. H. LAWS.

Bee Co., Tex.

Mrs. Laws' letter will be read with interest by all the sisters, wives included. She is right, we ought to hear more from the wives. I am sure we would be glad to.

How pleasant it must be to have all the family interested, and have some part in the work. I know something about how nice it is, for at one time our whole family worked with the bees.

Your visits, Mrs. Laws, to the out-apiaries must be delightful—reads like a pleasant summer excursion. You enjoy all the pleasures of camp life (negro cook included), with the profits thrown in.

Tell those girls for me that I think they are very sensible in their choice of dress.

* The Afterthought. *

The "Old Reliable" seen through New and Unreliable Glasses.
By E. E. HASTY, Sta. B Rural, Toledo, O.

CALIFORNIA AS A HONEY-STATE.

Glad to see B. S. K. Bennett, of California, stand up for his State. Guess he's right, too. California lost the lead to Texas by being caught in a bad year. Probably a good many of us will continue to think of California as the leading State in honey. Page 94.

MOVING BEES WITH OPEN HIVE-ENTRANCES.

Yes, Mr. Hyde, to try to move a lot of bees with entrances open and fail at it—that's a thing we can shudder at even without having experienced it. Page 99.

HOW THEY "DO" FRANCE.

The old and worn proverb, "They do things better in France," seems to have got juggled a little, and behold it is, They do France, to teach him better things, in Wisconsin. Pretty much everywhere exact red-tape is mighty; and saving half the expense oft counts little or nothing, a crime. Political millennium not here yet. Page 101.

THE AVERAGE PER COLONY.

The Northwestern didn't seem to get up much of a fight over the question how to count averages. Here is a man who has 100 colonies. Half of them die in winter. Forty of the remaining 50 came through "powerful weak," and don't get on their feet till harvest is past. Harvest is good, and the 10 good ones store lots of honey. The 40 he calls "nuclei;" and so is enabled to say, "My average was about 100 pounds." Shall we tolerate this? or shall we smite him, and tell him his average was only 20 pounds? Page 102.

THE HONEY EXCHANGE AND ITS WORKINGS.

Oranges and lemons are luxuries, but somehow the people will have them. Honey is a luxury—and most people

consent to go without very easily, if the article is not handy. This queer and ugly fact should be figured on in deciding as to the possibility of a Honey Exchange. Also, this related fact that higher prices are not nearly so much needed as the cultivation of the market clear from the bottom. Doubts whether the proposed Exchange will cultivate or do the opposite thing. A stream is not expected to rise higher than its fountain; and an organization formed of those who extract their honey before it is really ripe will hardly refuse to handle unripe honey. Page 103.

BEE-KEEPING IN GERMANY.

It is news that T. A. Heberly tells us about German bee-keeping—that bees are not set abroad there, but kept in bee-houses. Of course, he is correct, in part at least. We have in time past heard much of migratory bee-keeping in Germany. We can hardly infer that they pick up and migrate house and all. Possibly Germany may be a big place—so big that they have "locality" there. Page 104.

WINTERING BEES UNDER EARTH.

B. F. Schmidt says he winters bees under ground; but when we read more fully it appears that he puts the ground over the bees instead of the bees under the ground—piles tough, nicely cut sod around to make each hive a sort of Esquimaux hut. This seems to be a novelty. Where winters are not inclined to be wet, and tough sod is handy, I guess it's a promising way—that is, for those who are devoted to their bees and have but few. He makes plain dirt do for part way up at the bottom of the hut. Page 108.

FOUL BROOD AND HICKORY SMOKE.

Some of us incline to think that the foul brood which is cured by hickory smoke can not be a very foul kind. "Save your bacon" some other way—or rather, save your bacon that way, and your bees some other way. Page 109.

STATE OF WASHINGTON A BIG STATE.

And so Washington (State) is a big place also; and the east end of it can file a claim to the effect that usually it gets no more rain than is needed. We hear. How exceedingly easy it is for the most of us to use language which reaches much farther than our observations reach. Page 110.

Questions and Answers.

CONDUCTED BY

DR. C. C. MILLER, Marengo, Ill.

[The Questions may be mailed to the Bee Journal office, or to Dr. Miller direct, when he will answer them here. Please do not ask the Doctor to send answers by mail.—EDITOR.]

Taking Good Care of the Brood.

It is an easy thing to be careless in giving advice, and not the easiest thing, even when one desires to be careful, always to advise in such a careful way that no inexperienced person shall thereby be led into error. Some words of mine, on page 139, calls forth the following from Delos Wood:

"You say to pile brood over a weak colony 4, 5, or 6 stories high. Now, Doctor, you certainly, with 40 years' experience, ought to know it would take a rousing big colony to care for 6 stories of brood above their own, and even with a strong force many eggs and young larvae would perish. Tell 'Ohio,' if he shakes all the bees off, to put the combs over a strong colony and make it a boomer. Or shake off most of the bees and let the old and new hive be side by side, or the old one just behind the new one for a few days, till the bees get well started in the new hive; then destroy queen-cells and put the old hive on top of the new with excluder between. This does away with the swarming-fever, prevents increase, and keeps the colonies strong.

"In this locality it won't do to put brood over the shaken swarm until they have begun to build comb and the queen commences to lay. If you do, the bees go to the brood and build cells, and leave the queen to die.

"Don't strengthen a weak colony from a strong one in the spring. Make the weak one to help the strong one by giving brood from it to the strong one. Then after the main honey-flow the weak one may be allowed to build up strong for winter, or helped if need be from the strong ones."

If my advice should lead any one to pile six stories filled with brood above a weak colony all "at one fell swoop," it would surely be a rather serious thing, so I am much obliged to Mr. Wood for calling attention to the matter. I have been in the habit for years of piling

up brood over weak colonies, giving first a single story, then adding other stories a day or more later, and when giving the advice I failed to think of that point. I'm afraid I'll never learn to be as careful as I ought to be in such things.

Mr. Wood understands my advice one story worse than it really is, for I spoke of piling up till the whole pile was 5 or 6 stories high, including the story the weak colony already occupied.

In general, I should prefer piling the brood on weak rather than strong colonies, especially in working for comb honey, for the strong colonies do not need help, and such a mass of brood will make the weak ones strong in a short time.

I do not know what should make the difference, but I have in many cases put the queen on foundation in a lower story with all the brood in the upper story and an excluder between, when the queen would go to laying within two or three days. I should not, however, call that a shaken swarm at all.

The advice to make the weak help the strong in spring rather than to make the strong help the weak is in accord, I think, with what I have always advised. C. C. MILLER.

Basswood Seedlings in Their Second Year.

On page 183, J. D. Gehring quotes me as saying concerning basswood, "that seedling trees never live to the second year." Unless Mr. Gehring can refer me to page and paragraph, I can hardly believe I ever said anything so foolish as that. There are thousands upon thousands of seedling basswoods that have lived many years beyond their second year; in fact, I do not know that I ever saw a basswood tree that was not a seedling, except a few that were dug as sprouts coming up about a tree or a stump.

What probably was thus misconstrued by Mr. Gehring, was my saying that among the many seedlings coming up under the row of trees in front of my house, none has ever lived to the second year. If Mr. Gehring can tell us why this is so, I should be thankful. It can hardly be the character of the soil, for the trees under which these seedlings spring up each year are of luxuriant growth, and in the woods, at the back part of the place where seedlings continue in growth, the soil is much the same. There is, however, in the woods a natural mulching of forest leaves, and it is possible that may make the difference. C. C. MILLER.

Starters or Full Sheets—Clipping—Other Questions.

1. Which do you consider the most economical, starters or full sheets of foundation? I see there is a difference of opinion.
2. Do you think it best to clip the queen's wing?
3. Which is the best for this climate, to put bees in a dry cellar or put on their "overcoat?"
4. How would a dead air-space all around the hive of 2 inches do without any packing to make nests for mice?
5. Will it injure a young queen to keep her laying in a small nucleus for several days, then put her in a large colony? Some say that it will.
6. What do you think of the Swarthmore plan of rearing queens and fertilizing them? Is that not too much inbreeding?
7. I want to Italianize a lot of hybrid colonies, and I want the best kind of Italian strains. IDAHO.

ANSWERS.—1. I think that for most people there is sufficient advantage to pay the extra cost of full sheets.

2. It is most decidedly best for me, and the probability is that it would be for you.

3. I don't know, but I think the climate is mild enough in Idaho to favor outdoor wintering.

4. It will answer a very good purpose. Arthur C. Miller has reported favorably on wrapping tarred paper about the hives and tying with strings.

5. I should not be afraid of it.

6. So far as I understand it, drones not related to the queen can be used by that plan.

7. You can buy a queen for each colony, but it will be less expensive to get one or two queens and then breed from these.

Uniting and Feeding Bees.

My 24 colonies of bees are in the cellar under the dining-room. They are nice and dry, but I have not examined them nor molested them at all, and as the weather is getting warm I am anxious to find out how they are off for stores, as I had a few light colonies. I wish you would advise how to proceed. If I find them too light to pull through would I better unite two or more later on and feed them, or try to feed them in the cellar separately?

As I do not care for a very big increase in colonies, would it not be as well to unite early in the spring? If I do that, how will I manage the queens? NEBRASKA.

ANSWER.—The weather seems unusually warm for the time of year, and there is little doubt that by the time this reaches you there will be a day warm enough for bees to fly, when you can take them out of the cellar, and then it will be easier for you to tell which colonies are dangerously light in stores, and supply their needs. Then if you are afraid of cold weather afterward, you can return them to the cellar. Feed those that need it, according to instructions in your textbook and advice in this department. Do not unite colonies because light in stores, but if weak in bees it may be advisable. Whatever colonies are to be united may as well be united now as later. You

need pay no attention to the queens when uniting, as the bees will look out for that, but if you have any preference for queens kill the poorer of the two to be united. Indeed, there is some advantage in any case in killing one of the queens a day or two before uniting.

Painting Hives—Section Starters—Clovers—Size of Hive.

1. Would you prefer hives painted or not?
2. What size starters in the sections?
3. What kind of clover would you have for quality and quantity, alsike or the white for honey?
4. What size hive, 8 or 10 frame dovetailed, for comb honey?

MINNESOTA.

ANSWERS.—1. I prefer unpainted hives, but don't like their looks.
2. I use for $4\frac{1}{2} \times 4\frac{1}{2}$ sections a top starter $3\frac{1}{2}$ wide and $3\frac{1}{4}$ deep, and a bottom starter $3\frac{1}{2}$ wide and $\frac{3}{4}$ deep.
3. I hardly know; perhaps 8-frame if very close attention can be given to the business; certainly 10-frame if the bees can have much attention.

Transferring—Extracting to Give Room—Artificial Pollen.

I am a beginner with bees, but have read a good deal about their management. I have 25 colonies, the most of them in Langstroth hives, but some in box-hives, and I want to transfer them as early as possible.

1. When is the best time to transfer?
2. The most of my bees are long-tongued Italians, and they have a good deal of brood at present, but I don't think they have room enough, as they started in the winter with 10 Langstroth frames full of honey. Would you advise extracting part of the frames?
3. The bees have been carrying in sawdust from the mill, and gathering pollen from the cedar-trees. I gave them about two quarts of wheat flour, and they carried it into the hives in about three hours. Is that good for them? or should they have rye flour?

KENTUCKY.

ANSWERS.—1. At the time of fruit-bloom is a good time to transfer, but the tendency nowadays is toward waiting till the colony swarms and then transferring 21 days after swarming.

2. Go a little slow about extracting to give room. Bees are using up honey very rapidly in rearing brood, and very likely they will empty out the honey fast enough. However, you can inspect the combs, and if you find no empty cells, but all filled with either brood or honey, and a large proportion of it honey, then it may be advisable to make room. There is more likelihood that the queen will be crowded with honey much later in the season.

3. I don't suppose there is any material difference between wheat and rye flour. It may be not so well to give fine flour as to give bran and all.

Taking Bees from the Cellar.

I have been keeping bees for five years, and have been a close reader of bee-literature, but I do not remember ever seeing anything in the papers as to the different methods used by bee-keepers in taking their bees from the cellar in the spring.

Perhaps none of them have the trouble I do, that of the bees flying before I can get them from the cellar-door to the stand in the yard—about 4 rods. I have put an old piece of carpet over the front of the hive, but they will crawl on it, and when I shake them off they do not know where they belong.

WISCONSIN.

ANSWER.—If you are going to take out all the bees on the same day, smoke each colony a little before taking them out. That'll fix 'em. But don't smoke in the cellar unless you're going to take all out. You can, however, smoke them just as soon as you get them outside the cellar-door. Or take a big rag, dip it in cold water and don't wring it out, but lay it dripping against the entrance so that no bee can get out. They'll not take the trouble to crawl on the rag when it is wet.

Using Combs on Which Bees Died.

1. I bought 3 colonies of bees, and lost one. What is the best thing to do with the old comb? Would I better take out the comb and scald the frames, or would it be all right to put another colony in the old hive and let the bees clean it out to suit themselves?
2. How is the best way to hive a swarm?
3. Would it be all right to make a building $4 \times 4 \times 7$ feet, and put a swarm into it? Would the bees swarm in the spring, or would it keep increasing and not swarm at all? And would they be more likely to rob small colonies?
4. Why do you shake the supers during the flow of honey? Why not shake the bees down?
5. How can you tell when a colony is going to swarm?

PENNSYLVANIA.

ANSWERS.—1. Give it to the swarm just as it is. If badly daubed with diarrhea scrape off the worst.

2. The very best way I know of is to have your queen clipped, and when the swarm issues take away the old hive and set the empty one in its place. Then the returning bees will hive themselves, and you can let the clipped queen run in with them. If you see the

queen when the swarm issues, catch her and drop her among the bees when they have started into the hive.

3. Don't try it. They would not be likely to swarm, but it would not be entirely reliable as a preventive. A colony in an ordinarily large hive would be just as sure not to swarm, and it would grow just as large. But there would be no special danger of the bees robbing other colonies.

4. Probably more bee-keepers smoke than shake. But if you can succeed in shaking out all the bees it's a good thing, for it's a very difficult thing to smoke them all down.

5. Look for queen-cells, and expect a swarm when the first queen-cell is sealed. If there is a second swarm it will be somewhere about eight days after the first. When you're uncertain about a second swarm, put your ear to the hive in the evening, and if you hear the young queen piping look for a swarm the next day.

Is Carrying Pollen Indication of Queen's Presence?

Is it a sure indication that a colony has a queen when the workers are carrying in pollen and working nicely? I think it is. Am I right?

WISCONSIN.

ANSWER.—I would hardly call it a *sure* indication. A colony may continue to carry in pollen for some time after the loss of the queen, as evidenced by the unusual amount of pollen in a queenless colony, but, as a general rule, you need have little anxiety about a colony hard at work and carrying in large loads of pollen.

Wiring Shallow Frames.

How many wires should there be in those 6-inch shallow frames? and where should they be?

OREGON.

ANSWER.—Put in two wires at equal distances from top and bottom bars and from each other.

Spring Feeding—Blacks vs. Italians.

I have a few colonies of black bees and some Italians in dovetailed hives. I use self-spacing Hoffman frames.

1. If I remove the division-board and divide the space up among the frames, would the bees build between the frames? The combs are good and straight.

2. I am feeding my strong colonies once a day. Will I profit by it?

3. I work my apiary for comb honey, and I think the black bees finish a section closer, smoother, and the wax looks whiter than that of the Italians. Is it imagination or a fact?

WISCONSIN.

ANSWERS.—1. I'm not sure whether I understand you. There ought to be no division-board in the hive, but very likely you mean the dummy which should be in one side of the hive. If you take that out and then equalize the spacing, the bees will build out the cells sufficiently to fill up all the extra space given to them. What do you want to take the dummy out for?

2. Maybe, and maybe not. If you feed them on days that will not permit them to fly, when they are not lacking in stores, you're likely to do mischief.

3. It is very likely a fact, so far as whiteness is concerned. There are Italians which fill out the honey so close to the cappings that it doesn't look as white as where there is a good air-space left. Then there are other Italians that make very white work.

Pounds of Honey to One of Wax.

How many pounds of honey will a colony of bees consume in making one pound of wax?

UTAH.

ANSWER.—For a long time it was generally accepted that it takes 20 pounds of honey to make one of wax. Of late there has been much discussion regarding it, some estimates being as low as two or three pounds of honey for one of wax, with perhaps a more general gravitating toward five to seven.

Buying Italian Bees—Formalin Gas for Foul Brood—Feeding in Spring.

1. Where can I purchase a Langstroth 4-frame nucleus, with a laying Italian queen?

2. Where can I get formalin gas? and how must I use it for foul brood?

3. Can I feed sugar syrup to bees as soon as they can fly out in the spring? If so, in what quantity?

4. I have just melted up some brood-combs with honey and pollen all together. I took off the wax when it was melted—can I feed that honey to the bees this spring?

WISCONSIN.

ANSWERS.—1. I think the publishers of this Journal can serve you, unless you find something nearer home in the advertising columns.

2. Get it through your druggist. I know nothing about its use from actual experience, but I believe the drug is placed in a box having an opening through which the fumes escape into a hive-body placed over, the combs to be operated on being in this hive.

3. Yes, when bees fly freely you can feed any quantity you like.

4. Yes.



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gets its advantage over any other farm wagon. The metal wheels have the spokes **forged in—not cast in**—so they never come loose. Beware of cast in spokes. Our wooden wheels have convex faces and tires are shrunk on. Warranted for 5 years. Our wagons can be used for any farm work—turns shorter than any other. Big, wide, low loads. Light draught, strong, durable, handy and cheap. Dealers sell them. Send for illustrated book containing full description. It is free. Write at once.

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Complete stock for 1903 now on hand. Freight rates from Cincinnati are the lowest. Prompt service is what I practice. Satisfaction guaranteed. Langstroth Portico Hives and Standard Honey-Jars at lowest prices.

You will save money buying from me. Catalog mailed free. Send for same. Book orders for Golden Italians, Red Clover and Carniolan Queens; for prices refer to my catalog.

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GUS. DITTMER, Augusta, Wis.

being that the honey-bees are largely instrumental in the fertilization of the blossoms, thus giving the farmer a good crop of seed for future use and sale, for its use in reseeded his meadows and pastures is so essential to the growing of farm stock of almost all kinds. The buckwheat crop is also much improved by the work of our bees. The fruit-grower is largely helped in securing of better crops of fruit by the aid of the bees.

The bee-keeper needs such a law as a just protection to his property and to its very perpetuity. Thus it will be seen that, from a narrow view, three classes of our people are in need of a foul brood law—the farmer, the fruit-grower, and the bee-keeper. If this dread disease is allowed to go unchecked very few bees may be left to do the much-needed work for those above-named.

Our State needs such a law, and that badly. As bee-keepers we should now be fully awake and shower our law-makers with letters asking their earnest support.

I have at hand a letter from our representative, Hon. W. W. Gillespie, stating, as one of the House Committee, that the bill had been read and recommended by the Committee, that it do pass. This is encouraging so far. He also said he would do all he could to secure its passage.

F. A. SNELL.

Carroll Co., Ill.

The Hamilton Co., Ohio, Association.

It has been frequently urged in the bee-journals that one of the pressing necessities of the times is the enactment of a law in every State of the Union to protect the apiary from the ravages of foul brood.

It is to be regretted that so large and important a State as Ohio has no such law on its statute books, yet from Government statistics it produces more honey than the State of Colorado; its bee-keepers are more equally distributed over the State, and the consumption of honey in its manufacturing industries is so extensive that other States have to be drawn on for supplies to meet the demand.

A number of bee-keepers in Cincinnati, and adjoining suburbs in the county of Hamilton, held a meeting last August and formed an organization called the "Hamilton County Bee-keepers' Association," the first of its kind, exclusively in the State, with a membership of 50, and at each monthly meeting of the executive committee new members are being enrolled, and from all indications, where the constitution and objects of the association are fully understood by bee-keepers, still greater accessions to its ranks are expected, as in this county there are upwards of 500 bee-keepers.

The executive committee feel gratified and enthusiastic at the result of their preliminary efforts. They would strongly urge through the medium of the American Bee Journal, that similar initiative steps be taken in each of the 88 counties in the State, as early as possible this spring, so that this association may have a united support in demanding of the Legislature, through their delegates, the enactment of laws for the suppression of foul brood, as it is enjoyed by California, Colorado, Wisconsin, New York, Michigan, Florida, etc. Hamilton Co., Ohio. WM. J. GILLILAND.

Producer's Name on Honey.

In reading the article by P. D. Jones, and your reply, on page 83, I was very much impressed with the seriousness of this vital question, and I think we need an intelligent adjustment of this matter. I wish to register my protest along with that of Mr. Jones. I, like him, with considerable skill and painstaking, produce considerable comb honey, and, according to grade, I am willing to stand back of every pound with my own name. I sell my honey in a wholesale way, very often the whole crop to a single concern, with each section stamped, and so far they seem to prefer it that way; in fact, this year I was asked to stamp my honey, and I know they do not erase the name, because I have a great many letters from dealers who say they saw my honey, and asking quotations on honey. (If

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course, I am compelled to tell them So-and-So of their past, bought my entire crop, and, no doubt, can supply them, but will be pleased to correspond for my crop next year. This makes competition and higher prices, and that is my reward.

Now, the dealer was to erase my name and substitute his own he would be robbing me of my past dues, and if that is not illegal it ought to be punishable. But there is an unwritten law governing these things. I am not in the mood, neither do I have the inclination, to make a reputation for Mr. A's or Mr. B's honey; neither do I care to build up the reputation of all the honey produced in Idaho by painstaking care. And, there is a natural law of compensation which rewards each individual for their greater efforts. Now, Mr. York, you would not think of erasing the name from a package of D. M. Ferry's seeds and substituting your own, and selling it as such. If you erase the name from the honey you certainly do a very unjust thing. Come, now, Mr. York, own up that you are beaten; there's two to one, and numbers count.

ALMA OLSON.

Fremont Co., Idaho, Feb. 21.

[Were we to say more on this subject it would only be to repeat what we have said many times. We never say on our labels that we are the producer's of the honey we sell. We have spent hundreds of dollars in creating a demand for "York's Honey," and not for Olson's or that produced by Jones. Their whole crops would be but as a "drop in the bucket" compared to what we sell during a season. We stand back of all the honey that goes out as "York's Honey," and know nothing of Olson's, or Nelson's, or Miller's honey, and care nothing about their honey. We are not working to sell their honey, unless we buy it, when it becomes "York's Honey," like any other good honey we buy. After it passes out of their hands they have nothing further to do with it, having received their pay for it.

When you sell your wheat or oats to a dealer do you insist on having your name on the bags holding the wheat or oats? Well, hardly!—EDITOR.]

That Missing Link in Queen-Rearing.

With the editor's permission, I will give my notion on the so-called umbilicus, "missing link" or "line," as you please.

Where does it begin and end? What is its object? Dr. Gallup says, page 454, "attached to the vulva." He, being a doctor, is in a good position to know what he writes about. When I read this it set me to thinking. What a place for the beginning of an umbilical cord, anyhow! Do all queens have them? How about the workers and poor drones? Would "umbilical queens" be on the market, and what would be the price of the "extra-select-tested" from the "prize long-umbilicus queen?" These and many more questions came to my mind as I lay awake nights.

After reading the text-books and papers I resolved to let my bees settle the matter, and set some nuclei going for close observation. Let me say here that my library has 34 volumes (colonies) of 20 pages each, and for many years they have been my best books. Meanwhile Mr. Doolittle, page 569, took up the "line" and tightened the kinks by corroborating Dr. Gallup's article. He says: According to my old teacher, the missing "link," that which will produce the best queens—is supplied in nearly every instance when using the plan of queen-rearing as given in "Scientific Queen-Rearing." But Mr. Doolittle has given us the ending of the "line" as being "all under and through the royal jelly in every conceivable direction," while his old teacher says: "Those roots and tendrils do not go wandering around through the mass of royal jelly." Which is right, teacher or pupil? According to the former, the object of the cord is "to suck up substance from the jelly and convey it to the



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Bees For Sale.

100 17 frame-Hive Colonies at\$3.50 each
150 3-frame Nuclei at 2.00 each

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65 colonies of bees, 46 of which are is Root's dovetailed hives, and the remainder in chaff-hives. Apply to
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Wanted TO BUY

30 to 50 colonies of Bees on Hoffman frames.
Address, H. JOHANSEN,
Fremont Hotel, 19 South Clark St., Chicago, Ill.
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Daughters of Select Imported Italian, Select long-tongued (Moore's), and Select, Straight 5-band Queens. Bred 3/4 miles apart, and mated to select drones. No bees owned within 2 1/2 miles; none impure within 3, and but few within 5 miles. No disease. 30 years' experience. **WARRANTED QUEENS, 75 cents each; TESTED, \$1.50 each.** Discount on large orders. Contracts with dealers a specialty. Discount after July 1st

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We have made arrangements so that we can furnish Seed of several of the Clovers by freight or express, at the following prices, cash with the order:

	5lb	10lb	25lb	50lb
Sweet Clover (white).....	.75	\$1.40	\$3.25	\$6.00
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White Clover.....	1.50	2.80	6.50	12.50
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Prices subject to market changes.

Single pound 5 cents more than the 5-pound rate, and 10 cents extra for postage and sack.

Add 25 cents to your order, for cartage. If wanted by freight, or 10 cents per pound if wanted by mail.

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queen," and the pupil leaves the same impression.

Now we have it all in a nutshell. Isn't it grand? With the subject set forth and championed by such high authorities as quoted above, I have been a little slow to expose myself. But with my bee-nature to back me up, I now wade into the truth fearlessly.

My nuclei were kept going until late in November—carried them in and wrapped them up nights. The cells were examined frequently, and in the pupa stage carefully dissected, mounted in water and viewed with the aid of lenses. The so-called "link" was exposed and magnified separately, and in no instance did it prove to be anything more than a part of the delicate lining that the pupa queen gives to her couch when she "lies down to pleasant dreams," as it were.

Umbilicus nonsense! There is no such thing. Sting-trowel theories dwindle to nothing in comparison. Nay, my bees have a stronger proof that it is a fallacy. Here is a truth they have taught me, and for their sake I will speak for them. I challenge the entire bee-keeping fraternity to disprove it. Here it is: *Honey-bees, including queens, drones and workers, are inactive and take no food while in the pupa stage.* This is also true in other of the higher orders on insects, as the Lepidoptera and Diptera. If these assertions are correct no further proof is necessary.

The lump of royal jelly in the cell has nothing to do whatever with the kind of queen it contained. Why, it never became a part of her. It is what she ate, and not the left-over dried waste, that developed her.

Nature is what she is, and she will not yield one jot to our pet theories, even though we spin them ever so fine. We can produce the highest grade of "pudding" only by living in close touch with our bees and hearkening to all they teach.

EVAN E. EDWARDS.

Madison Co., Ind.

Stinging a Hatpin—Other Peculiarities of Bees.

I think I have an explanation for the action of bees in stinging a hatpin head. It involves the trait I learned when a boy, back in Illinois, by which we boys used to jug bumble-bees, hornets and yellow jackets, and doubtless would catch bees or any stinging insect.

We would take a jug (white preferred) partly filled with water, and set it near a nest, in plain sight, and then disturb the inmates, when they would come out and fight the jug, stinging at the mouth until they went in with the peculiar thud made by an insect going into a jug or the bung-hole of a barrel. Disturbing them a few times would exterminate the entire colony. Bees generally sting at some mark, as mouth, nose, eye or ear. I have had them sting at a white shirt-button on my wrist-band.

If there are only one or two bees that are anxious to fight, I try to get them to attack the nose of my smoker, and give them a whiff of smoke, which soon quiets their nerves.

My bees were very cross when I got them three years ago, but they are quite gentle now. Bees are irritated by jars, as a person's breath, the smell of poison from the stinger. I avoid these things as much as possible. I don't think they know me from any one else, or pay any attention to any smells, except the above. I wear the clothes which I wear at my other farm work, and they are often tainted with various smells. The sweat from my face often drops into the hive without disturbing the bees. I think my bees know when I have the smoker, because a small amount of smoke—so little that it does not seem to be sufficient to have any effect—keeps them quiet, when if there was no smoke used they would come out for a general fight.

Prowers Co., Colo.

C. STIMSON.

The Season of 1902.

The last season, around here, was a bad one for gathering honey, from early spring to late fall. There was plenty of bloom in its season, but having so much rain and cold spells, the rains washed all nectar out of the bloom, which made it hard for bees to gather honey, except from the basswood flow, and for two

Good Bye

old whitewash brush with your hard work and waste of time.

The Hardie Whitewashing Machine

not only works much faster but forces the liquid into every crack and destroys insect life which a brush would pass over.

Send \$7.50 for the complete machine, express prepaid, if you are not satisfied we return the money. Full particulars if you need them. Address Dept. H

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Wanted to Purchase

200 to 400 colonies of **BEES**—northern California, Oregon or Texas. State price, f.o.b. cars; also kind of hive, with and without supers; and condition of bees, about April 1st to 10th.

Address, **DR. GEO. D. MITCHELL & CO.,**
12A1f 329 Wash. Avenue, OGDEN, UTAH.

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when the hens lay. Keep them laying. For hatching and brooding use the best reasonable priced incubators and brooders—built upon honor, sold upon guarantee.

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Barred Plymouth Rock Poultry, Strawberry Plants, Bee Fixtures. Send for circular.

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The Danz. Hive—

The Comb Honey Hive.

We sell it. We are authorized jobbing agents for **THE A. I. ROOT CO.,** for Michigan. Send us a list of the goods you want for this season, and let us quote you prices. Beeswax wanted. Send for catalog.

H. M. HUNT & SON,
10A17t BELL BRANCH, MICH.

Bee-Keepers, Remember

that the freight rates from Toledo are the lowest of any city in the U.S. We sell

Root's Supplies at their Factory Prices

Poultry Supplies and Hardware Implements a specialty. Send for our free Illustrated Catalog. Honey and Beeswax wanted.

GRIGGS BROS.,
214 Jackson Avenue,
TOLEDO, OHIO.

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BASSWOOD TREES.

One to two feet.....25 for \$1.00; 100 for \$3.00
Two to three feet.....25 for 1.25; 100 for 4.00
Three to four feet.....25 for 1.50; 100 for 5.00

12A3t **G. W. PETRIE, Fairmont, Minn.**

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or three weeks during this flow the bees did fairly well.

I put out 6 colonies, spring count; 2 of them dwindled out, which left me 4. I bought 3 prime swarms, and caught 2 wild ones, and increased to 15 colonies, but did not get much honey. I had to feed syrup to 3 late swarms, and I am at present feeding 5 colonies sugar candy; I may have to feed more after putting them out on the summer stands.

I am in a good location, on the Des Moines river, with a good range for bees, season considered. Last season was a bad one for robber-bees getting in their work; I had to keep the hive-entrances closed pretty nearly all season. I had one weak colony that was attacked by robbers, and they locked horns with the robbers, and went out, bag and baggage.

I winter my bees in a storm cave with sand floor; it is as dry as can be; the door faces the south, and in fine weather, when the sun is shining, I open the door and the bees come out and have a flight. I am letting them have their second flight to-day, there being no snow on the ground, and they are well sheltered from wind.

I bought 8 colonies 2 years ago; they were in old racked up boxes; the wax-worms got away with one of them.

I could not get along without the American Bee Journal; it is a weekly visitor to me.

Say, couldn't some of those smart Alecs breed up a strain of bees without a sting, as well as a strain of bees with a longer tongue? It is a fine day, and the bees are out having a playing spell.

W. IRVINE.
Webster Co., Iowa, March 7.

CONVENTION NOTICE.

Utah.—The spring meeting of the Utah State Bee-Keepers' Association will be held in the City and County Building, Salt Lake City, April 5, at 10 o'clock a.m. All bee keepers of Utah and adjoining States are cordially invited to be present.
J. N. ELLIOTT, Sec.
E. S. LOVESY, Pres.

Missouri.—Bee-keepers of Missouri will meet in convention at Moberly, in the Commercial Club Rooms, at 2 o'clock p.m., on April 22, 1903, to organize a Missouri State Bee-Keepers' Association. We expect to complete our organization on that day and have some bee-talks the day following. Everybody is invited who is interested in bees and honey. Let us have a good turn-out and a good time. Good hotel accommodations can be had at \$1.00 and \$2.00 a day. The Monitor Printing Company will tell you where the Commercial Club rooms are located.
W. T. CARY, Acting Secretary.
Wakenda, Mo.

A Celluloid Queen-Button is a very pretty thing for a bee-keeper or honey-seller to wear on his coat-lapel. It often serves to introduce the subject of honey, and frequently leads to a sale.

NOTE.—One reader writes: "I have every reason to believe that it would be a very good idea for every bee-keeper to wear one [of the buttons] as it will cause people to ask questions about the busy bee, and many a conversation thus started would wind up with the sale of more or less honey; at any rate it would give the bee-keeper a superior opportunity to enlighten many a person in regard to honey and bees."

The picture shown herewith is a reproduction of a motto queen-button that we are furnishing to bee-keepers. It has a pin on the underside to fasten it.

Price, by mail, 6 cents; two for 10 cents; or 6 for 25 cents. Send all orders to the office of the American Bee Journal.

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7-ounce.

The pictures shown herewith represent the best Jars for honey that we know of. They are made of the clearest flint glass, and when filled with honey, and neat labels attached, they make as handsome packages as can be



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imagined. The glass top rests on a flat rubber ring, and is held in place by a flat steel spring across the top as shown. They are practically air-tight, thus permitting no leak, which is an important thing with honey-sellers.

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If you try them once you will likely use no other kind of top or sealing arrangement for honey-jars.

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A Perfect Ear.—The Seed-Corn question is a subject of much interest to the farmers just now, and there is perhaps more space devoted to it in agricultural papers than any other subject. The corn-judging schools which have been held in Iowa and Illinois for 2 or 3 years past have been well attended, and farmers who have always thought that they knew what a good ear of corn was, are finding that there are more points to be considered than they had heretofore imagined could exist. The Golden West Corn is a new variety introduced this year by the Iowa Seed Co., of Des Moines, Iowa. This corn is perhaps the greatest step in advance over old varieties which has been made for a number of years, but it still must be recognized that as yet perfect corn does not exist. The best judges of seed-corn do not claim ever to have seen an ear which would score 100 percent when carefully judged. There are many points to be taken into consideration; the length and circumference of the ear, and depth, color and shape of grain; solidity, size and color of cob, filling out at tips and butts, proportion of corn to cob, etc., and it is difficult to get all the good characteristics combined in any one ear.

The above-named Seed Company have this year published a Corn Manual which is one of the most valuable little books that we have seen. It gives a great amount of practical information which has never before been published, and also full instructions for judging seed-corn. Every one who expects to grow even a single acre of corn should have a copy of this book to help select their seed-corn in a more intelligent way, and the Iowa Seed Co. offer to send a copy to any reader of this paper for 10 cents in stamps, or they will send it free to any one purchasing seed-corn from them this year. Please mention the American Bee Journal when writing.

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HONEY AND BEESWAX

MARKET QUOTATIONS.

CHICAGO, March 24.—The trade is of small volume with little change in prices of any of the grades. Choice white comb sells at 15@16c with amber and other off grades slow at 2@5c less. Extracted, 7@8c for white, according to kind and flavor; dark grades, 5½@6½c. Beeswax, 30c.
R. A. BURNETT & CO.

ALBANY, N. Y., Mar. 14. — Honey demand quiet; receipts and stock light. Comb selling, light, 15c; mixed, 14@15c; dark, 13@14c. Extracted, dark, at 7@7½c. Beeswax firm, 30@32c.
H. R. WRIGHT.

KANSAS CITY, Mar. 14.—The demand for both comb and extracted honey is better, receipts light. We quote as follows: Extra fancy white comb, per case, \$3.40; strictly No. 1, \$3.30; No. 1 amber, \$3@3.25; No. 2, white and amber, \$2.50. Extracted, white, per pound, 7c; amber, 6@6½c. Beeswax, 30c.
C. C. CLEMONS & CO.

CINCINNATI, March 11.—The demand for extracted honey is good at the following prices: Amber, barrels, 5½@6½c, according to quality; white clover, 8@9c. Fancy comb honey, 15½@16½c. Beeswax strong at 30c.

THE FRED W. MUTH CO.

NEW YORK, March 5.—There is a fair demand for white comb at 15c per pound for fancy, 13@14c for No. 1, and 12c for amber, with sufficient supply to meet the demand. Dark honey will be cleaned up with very little left; it is selling at about 11c per pound. Extracted rather weak and in quantity lots, prices generally shaded. We quote: White, 7@7½ cents; amber, 6½@7c; dark, 6c. Beeswax scarce at 30@31c for good average.
HILDEBRATH & SHELLEN.

CINCINNATI, Mar. 7.—The comb honey market has weakened a little more; is freely offered at following prices: Fancy white, 14@15c; no demand for ambers whatever. The market for extracted has not been changed and prices are as follows: Amber in barrels, 5½@5¾c; in cans 6@6½c; white clover, 8@8½c. Beeswax, 28@30c.
C. H. W. WEBER.

SAN FRANCISCO, Mar. 11.—White comb honey, 12½@13½c; amber, 9@11c; dark, 7@7½c. Extracted, white, 6½@7½c; light amber, 5½@6c; amber, 5@5½c; dark, 4@4½c. Beeswax, good to choice, light 27@29c; dark, 25@26c.

Demand is fair on local account for water-white, uncandied, but there is not much of this sort obtainable. Market for same is firm at ruling rates. Candied stock and common qualities are going at somewhat irregular and rather easy figures, holders as a rule being desirous of effecting an early clean-up.

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